

AMENDMENTS TO THE CLAIMS

Claims 1, 2, 4, 7-11, 13-15, 17-20, 22-24 have been amended. No claims have been canceled. No claims have been added.

LISTING OF CLAIMS

1. (Currently Amended) An apparatus comprising:

~~an intermediate device comprising protocol sensing circuitry being capable of determining, at least in part, at least one communication protocol, among a plurality of communication protocols, via which at least one storage device connected to the intermediate device is capable of communicating, the intermediate device also comprising flow control circuitry being capable of controlling a data stream that may be communicated from said storage device using at least one of a plurality of communication protocols.~~

an intermediate device to be coupled between a storage protocol controller and at least one storage device, and capable of communicating in accordance with a plurality of storage protocols, and including, protocol sensing circuitry to determine which one of a plurality of storage protocols the at least one storage device is capable of communicating, and flow control circuitry to control a data stream between the at least one storage device and the storage protocol controller, wherein the data

stream includes the storage protocol determined by the protocol sensing circuitry.

2. (Currently Amended) The apparatus of claim 1, wherein:

the intermediate device is further capable of detecting a predetermined initialization signal sequence indicative of a communication storage protocol.

3. (Original) The apparatus of claim 2, wherein:

the predetermined signal sequence comprises an out-of-band signal sequence.

4. (Currently Amended) The apparatus of claim 1, wherein:

the protocol ~~detection~~ sensing circuitry is also capable of receiving at least one of an out-of-band signal sequence and an analog burst signal sequence, and the flow control circuitry comprises data tracking circuitry capable of receiving a data stream from said at least one storage device and also capable of generating a clock signal indicative of the frequency of said data stream, said flow control circuitry also comprising retimer circuitry capable of receiving said data stream and said clock signal and generating a retimed data stream.

5. (Currently Amended) The apparatus of claim 1, wherein:

the intermediate device is capable of being coupled, via at least one cable, to said at least one storage device.

6. (Original) The apparatus of claim 1, wherein:

the plurality of different communication protocols comprise a Fibre Channel protocol, a Serial Attached Small Computer System Interface protocol, and a Serial Advanced Technology Attachment protocol.

7. (Currently Amended) The apparatus of claim 1, wherein:

the intermediate device is capable of being coupled to a cable compatible with at least one of said communication storage protocols.

8. (Currently Amended) The apparatus of claim 1, wherein:

the intermediate device further comprises protocol control circuitry capable of receiving a signal from said at least one storage device and, in response at least in part thereto, generating an acknowledge signal to be transmitted to said at least one storage device.

9. (Currently Amended) A system, comprising:

~~a circuit card comprising an integrated circuit capable of communicating in accordance with a plurality of different communication protocols, the circuit card being capable of being coupled to a bus, and an intermediate device coupled to said circuit card, said intermediate device being capable of~~

~~determining, at least in part, at least one communication protocol, among a plurality of communication protocols, via which at least one storage device connected to the intermediate device is capable of communicating, the intermediate device also being capable controlling a data stream generated by at least one of said integrated circuit and said storage device.~~

at least one storage protocol controller capable of communicating in accordance with a plurality of storage protocols, the a least one storage protocol controller being capable of being coupled with a bus;
a storage enclosure including a plurality of storage devices, wherein two or more of the storage devices are combined in a Redundant Array of Inexpensive Disk (RAID) configuration, and each storage device is capable of communicating in accordance with one of Serial Attached SCSI (SAS), Serial Advanced Technology Attachment (SATA) and Fibre Channel (FC) storage protocol;
an intermediate device coupled between the storage protocol controller and at least one of the plurality of storage devices, and capable of communicating in accordance with a plurality of storage protocols, and including,
protocol sensing circuitry to determine which one of the plurality of storage protocols the at least one storage device is capable of communicating, and

flow control circuitry to control a data stream between the at least one storage device and the storage protocol controller, wherein the data stream includes the storage protocol determined by the protocol sensing circuitry.

10. (Currently Amended) The system of claim 9, wherein:

the intermediate device is coupled to said circuit card storage protocol controller and said at least one of the plurality of storage devices via one or more cables.

11. (Currently Amended) The system of claim 9, wherein:

the intermediate device is further capable of detecting a predetermined initialization signal sequence indicative of at least one of said plurality of communication storage protocols.

12. (Original) The system of claim 11, wherein:

the predetermined signal sequence comprises an out-of-band signal sequence.

13. (Currently Amended) The system of claim 9, wherein:

the intermediate device is further capable of controlling said data stream to produce a retimed data stream, and transmitting the retimed data stream

to at least one of the ~~circuit card~~ at least one storage protocol controller and the at least one of the plurality of storage devices.

14. (Currently Amended) The system of claim 9, wherein:

the plurality of different ~~communication~~ storage protocols comprise a Fibre Channel protocol, a Serial Attached Small Computer System Interface protocol, and a Serial Advanced Technology Attachment protocol.

15. (Currently Amended) A method comprising:

determining, at least in part, by an intermediate device ~~at least one communication protocol~~ supporting a plurality of storage protocols, via which one of the plurality of storage protocols at least one storage device connected to coupled with the intermediate device is capable of communicating; and

controlling, at least in part by the intermediate device, at least one data stream being communicated in accordance with the one storage protocol from said at least one storage device in accordance with at least one communication protocol to a storage protocol controller.

16. (Original) The method of claim 15, further comprising:

retiming, by the intermediate device, said at least one data stream generated by said at least one storage device.

17. (Currently Amended) The method of claim 15, further comprising:
receiving, by the intermediate device, an initialization signal sequence; and
selecting, by the intermediate device, at least one communication of the
plurality of storage protocols based on said initialization signal sequence.

18. (Currently Amended) The method of claim 15, further comprising:
determining, by the intermediate device, a link frequency associated with said
at least one storage device; and
communicating, by said intermediate device with said at least one storage
device using said link frequency.

19. (Currently Amended) The method of claim 15, further comprising:
communicating, by the intermediate device with said at least one storage
device with a selected communication storage protocol among a the
plurality of communication storage protocols.

20. (Currently Amended) An article comprising:
a storage medium having stored thereon instructions that when executed by a
machine result in the following operations:
determining, at least in part, by an intermediate device at least one
communication protocol supporting a plurality of storage protocols, via
which one of the plurality of storage protocols at least one storage device

~~connected to~~ coupled with the intermediate device is capable of communicating; and

controlling, at least in part by the intermediate device, at least one data stream being communicated in accordance with the one storage protocol from said at least one storage device ~~in accordance with at least one communication protocol~~ to a storage protocol controller.

21. (Original) The article of claim 20, further comprising the following operations:

retiming, by the intermediate device, said at least one data stream generated by said at least one storage device.

22. (Currently Amended) The article of claim 20, further comprising the following operations:

receiving, by the intermediate device, an initialization signal sequence; and selecting, by the intermediate device, at least one communication of the plurality of storage protocols based on said initialization signal sequence.

23. (Currently Amended) The article of claim 20, further comprising the following operations:

determining, by the intermediate device, a link frequency associated with said at least one storage device; and communicating, by said intermediate device with said at least one storage device using said link frequency.

24. (Currently Amended) The article of claim 20, further comprising the following

operations:

communicating, by the intermediate device with said at least one storage

device with a selected communication storage protocol among a the

plurality of communication storage protocols.